

การพัฒนาการสกัดสารสำคัญจากพืชสมุนไพรด้วยคลื่นความถี่สูงเพื่อนำไปประยุกต์ใช้ในระดับอุตสาหกรรม

(Development of ultrasound-assisted extraction of bioactive compounds from medicinal plants for industrial applications)

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Abstract

Bioactive compounds are chemical substances that have biological effects and are beneficial to human health. Numerous potential sources of bioactive components in nature are fairly underutilized due to the lack of a scientific strategy that can be sustainably viable and practically feasible. The recovery of bioactive compounds is a big challenge and their uses in industries for the development of functional food, cosmetic, and pharmaceutical products are a promising research area. The extraction method is an important key to get potential bioactive compounds. Various techniques are available for the extraction of these bioactive compounds but due to the limitation of their thermolabile nature, there is a demand for nonthermal or green technology which can lower the cost of operation and decrease operational time and energy consumption as compared to conventional methods. Ultrasound-assisted extraction (UAE) is gaining popularity due to its relative advantages over conventional extraction. UAE can extract bioactive components in a short time, at low temperatures, with lesser energy and solvent requirement. Additionally, UAE is suitable for upscaling in industrial processes. The aim of this presentation is mainly to summarize the recent findings on UAE for extraction of bioactive compounds from medicinal plants. The concepts, mechanisms, factors affecting the sonication process, and applications in the extraction of bioactive compounds are reviewed. The future perspective of ultrasound technology is also discussed, which will help us to better understand the complex mechanism of ultrasonic-assisted extraction and further guide its applications in industrial processes.

Keywords: ultrasound-assisted extraction (UAE), bioactive compounds, medicinal plants, industrial applications